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Note by the Secretary-General

The Secretary-General has the honour to transmit to the members of the General Assembly the report of the Joint Inspection Unit entitled "Information and communications technology governance in United Nations system organizations" (JIU/REP/2011/9).

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INFORMATION AND COMMUNICATIONS TECHNOLOGY GOVERNANCE IN UNITED NATIONS SYSTEM ORGANIZATIONS

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EXECUTIVE SUMMARY

Information and communications technology (ICT) governance in United Nations system organizations

JIU/REP/2011/9

Objective

In recent years, the world has witnessed the rapid growth and ever-increasing importance of information and communication technologies (ICT). ICT has become a dynamic, strategic and indispensable asset of an organization in the achievement of its mission and goals.

How to harness the power of ICT effectively? How to maximize investment in ICT? How to mitigate the risks associated with ICT? All these questions point to and rely on one parameter: ICT governance.

The objective of the review is to conduct a comparative analysis of the different ICT governance frameworks, practices and processes in the various United Nations system organizations with a view to identifying best practices and lessons learned, and thereby promote effective ICT governance.

Main findings and conclusions

The report contains 11 recommendations, one of which is addressed to the legislative bodies of the United Nations system organizations, nine to their executive heads and one to the Secretary-General of the United Nations in his capacity as Chairman of the United Nations System Chief Executives Board for Coordination (CEB).

In the Inspectors' opinion, an effective ICT governance framework should include the following:

- A well-functioning ICT governance committee or equivalent, which should be composed of senior managers from all parts of the organizations and meet regularly, and whose functioning is reviewed periodically (recommendations 2 and 3);
- Strong leadership over the ICT governance infrastructure by the executive management, preferably at the level of the deputy head of the organizations (recommendation 1);
- An appropriate Chief Information Officer (CIO) or equivalent in a senior-level post with overall responsibilities and authority and access to the executive management (recommendation 4);
- A full-fledged corporate ICT strategy aligned to the organizations' business needs and priorities, and yielding true value of the ICT investment, which should be reviewed and updated periodically (recommendations 5 and 7);
- A well-established mechanism to monitor the implementation of the ICT strategy (recommendation 8);
- Strengthened efforts to track ICT costs in the organizations and conduct post-implementation reviews of major ICT investments so as to facilitate strategic decision-making, cost-effectiveness, accountability and transparency (recommendations 9 and 10).

Recommendation for consideration by the legislative organs

Recommendation 6
The legislative bodies of the United Nations system organizations should request the executive heads to present the corporate ICT strategies to member States for their information and support.

Recommendation for consideration by the CEB

Recommendation 11
The Secretary-General, in his capacity as Chairman of the CEB, should streamline the Board's ICT Network by identifying and focusing on common ICT issues and providing clear guidance to the network in order to improve cooperation and coordination among the United Nations system organizations.

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ABBREVIATIONS

CEB	United Nations System Chief Executives Board for Coordination
CBIT	Committee on Business and Information Technology
COBIT	Control Objectives for Information and Related Technology
EPM	Enterprise Portfolio Management
ERM	Enterprise Risk Management
ERP	Enterprise Resource Planning
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
HLCM	High-Level Committee on Management
IAEA	International Atomic Energy Agency
ICAO	International Civil Aviation Organization
ICT	Information and Communication Technology
ICTN	ICT Network of the United Nations System under the CEB
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
IMO	International Maritime Organization
ISACA	Information Systems Audit and Control Association
IPSAS	International Public Sector Accounting Standards
IT	Information Technology
ITGI	IT Governance Institute
ITIL	Information Technology Infrastructure Library
ITU	International Telecommunications Union
JIU	Joint Inspection Unit
OHCHR	Office of the High Commissioner for Human Rights
OECD	Organisation for Economic Co-operation and Development
OSCE	Organization for Security and Co-operation
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNHCR	Office of the United Nations High Commissioner for Refugees
UN-ICC	United Nations International Computing Centre
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNODC	United Nations Office on Drugs and Crime
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
UNWTO	United Nations World Tourism Organization
UPU	Universal Postal Union
WFP	World Food Programme
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization

I. INTRODUCTION

A. Background, objectives, scope and methodology

1. As part of its programme of work for 2011, the Joint Inspection Unit (JIU), in response to a suggestion from United Nations Development Programme (UNDP) that was supported by a dozen other United Nations system organizations, conducted a review of "Information and communication technology (ICT) governance in the United Nations system organizations."

2. No system-wide review of ICT governance in the United Nations system organizations has yet been conducted. However, in 2008, the JIU issued two reports[1] which briefly touched on the topic of ICT governance. The reports stressed the importance of effective ICT governance as a critical factor for successful ICT operations in an organization. They also highlighted that ICT governance is an issue of critical significance for the United Nations system organizations, one which merited further study.

3. In his report "Investing in information and communications technology: status report" (A/62/502), the Secretary-General of the United Nations stated that achieving effective ICT governance was a major challenge for large, complex and geographically dispersed organizations.[2]

4. The objective of this review is to conduct a comparative analysis of the different ICT governance frameworks, practices and processes in the various United Nations system organizations, with a view to identifying best practices and lessons learned and thereby promote effective ICT governance. The key aspects considered included the ICT governance structures in place; implementation of the organization's ICT strategy; strategic alignment of ICT with the organization's business objectives and mandate; ICT resource management, decision-making process and investment; ICT performance and risk management, including ICT security and business continuity/disaster recovery. In addition to ICT governance within the organizations, the review also examined ICT governance at the United Nations system-wide level, notably coordination and cooperation among the United Nations system organizations in the area of ICT, for example, through the ICT Network (ICTN) of the United Nations System Chief Executives Board for Coordination (CEB) and its High-Level Committee on Management (HLCM).

5. In the preparation of the report, the Inspectors took into consideration, as appropriate, internationally accepted ICT governance standards and methodologies considered industries best practice, such as the Control Objectives for Information and Related Technology (COBIT), developed by the Information Systems Audit and Control Association (ISACA) and its affiliated IT Governance Institute (ITGI), the Information Technology Infrastructure Library (ITIL), developed by the Government of the United Kingdom, Prince2 methodologies, ISO 20000 and 27000 standards for IT security, as well as ISO standard ISO/IEC 38500-2008 for corporate governance of information technology.

6. In accordance with JIU internal standards and guidelines and its internal working procedures, the methodology used to prepare this report included a preliminary review, questionnaires, interviews and an in-depth analysis. Interviews were conducted in Geneva, New York, Paris, Rome, Vienna and Washington DC with officials of most JIU participating organizations, as well as the CEB Secretariat. Consultation and dialogue were sought with all main stakeholders, including senior and executive managers, ICT officials, users as well as oversight officials.

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[1] See JIU/REP/2008/5, Review of ICT hosting services in the UN system organizations, and JIU/REP/2008/6, Review of management of internet websites in the UN system organizations; also JIU/REP/2002/9, Information management in the United Nations systems organizations.

[2] A/62/502, para. 2.

7. The report team also participated, upon invitation, in the 16th and 17th session of the CEB ICT Network (ICTN), held in April and October 2011 respectively, and discussed major issues concerning ICT governance with participants.

8. Other international organizations and financial institutions, such as the European Union (EU), the International Fund for Agricultural Development (IFAD), the International Monetary Fund (IMF), the International Organization for Migration (IOM), the Organisation for Economic Co-operation and Development (OECD), the Organization for Security and Co-operation (OSCE), and the World Bank were also consulted. Given the wide range of issues covered, it was not possible to carry out an in-depth review of all of them in each and every United Nations system organization. Therefore, reference is made to organizations in particular contexts with the sole aim of providing examples.

9. Finally, the internal and external auditors of the United Nations system organizations and their evaluation offices have issued various reports touching on ICT governance. Those reports, as well as the ongoing discussions and debate at the CEB/HLCM level on pertinent issues were taken into account in the appropriate context.

10. As is customary, comments on the draft report were sought from the participating organizations and taken into account in the final report.

11. In accordance with article 11.2 of the JIU statute, this report was finalized after consultation among the Inspectors so as to test its conclusions and recommendations against the collective wisdom of the Unit.

12. To facilitate the handling of the report and the implementation of its recommendations and the monitoring thereof, the table in annex IV indicates whether the report is submitted to the organizations concerned for action or for information. The table identifies the recommendations relevant for each organization and specifies whether a decision by the legislative body of the organization or action by its executive head is required.

13. The Inspectors express their appreciation to all who assisted them in the preparation of this report, particularly those who participated in the interviews and so willingly shared their knowledge and expertise.

II. GOVERNANCE

A. Definition of ICT governance

14. ICT governance is a subset discipline and an integral part of corporate governance. [3] "ICT governance is the responsibility of executives and the board of directors, and consists of the leadership, organisational structures and processes that ensure that the enterprise's ICT sustains and extends the organisation's strategies and objectives." [4]

15. In line with this definition, the Secretary-General, in a recent report, stated as follows: "The principles and processes associated with ICT decision-making and its underlying organizational structures come together under the broad concept of ICT governance. The ICT management framework clarifies how decisions are made, who provides inputs for the decisions, who is accountable and how ICT activities are coordinated within the

[3] The International Organization for Standardization (ISO) defines corporate governance of IT in paragraph 1.6.3 of its standard ISO/IEC 38500-2008, Corporate governance of information technology, as the system by which the current and future use of IT is directed and controlled. Corporate governance of IT involves evaluating and directing the use of IT to support the organization and monitoring this use to achieve plans. It includes the strategy and policies for using IT within an organization.

[4] See ITGI, *Board Briefing on IT Governance*, 2nd Edition, 2003, pp. 6-11, available at http://www.isaca.org/Knowledge-Center/Research/Documents/BoardBriefing/26904_Board_Briefing_final.pdf

Secretariat and ensures that key stakeholders take on the appropriate roles and responsibilities to clearly and effectively guide the management of the Organization's ICT activities and resources."[5]

16. According to COBIT, the governance of ICT is the pivot directing ICT endeavours and ensuring that ICT performance meets the following objectives: (i) alignment with and realization of the organization's mandate and objectives; (ii enablement of the organization by exploiting opportunities and maximizing benefits; (iii) responsible use of ICT resources; and (iv) appropriate management of ICT-related risks.[6]

B. Importance of ICT governance

17. In recent years, the world has witnessed the rapid growth and ever-increasing importance of ICT. It is hard to imagine an organization operating successfully in the 21st century without a strong ICT infrastructure.

18. The role of ICT has evolved over the past decades from a supporting, back-office function to a key function, enabler and driving force for organizations. It has become a dynamic and strategic asset of an organization for the successful achievement of its mission and goals. ICT is essential to managing transactions, information and knowledge necessary to achieve and sustain an organization's mandate and goals. Hence, organizations are becoming increasingly dependant on a well-functioning ICT infrastructure.

19. At the same time, the expenditure and costs for ICT have grown significantly over the past years. The approximate total ICT costs in the United Nations system organizations range from about 2 to about 13 per cent of the total annual budget of the organizations over 2009 and 2010, with most organizations spending about 4 to 7 per cent of the total annual budget on ICT.[7] Not included in those costs is expenditure for specific ICT initiatives and projects, such as Enterprise Resource Planning (ERP) systems, which, as some organizations observed, may be as high as the annual ICT budgets of the organizations. Total ICT costs at the World Food Programme (WFP) were about 3 per cent of the budget in 2009/2010, and at the Office of the United Nations High Commissioner for Refugees (UNHCR), approximately 3 and 4 per cent in 2009 and 2010 respectively. The United Nations Population Fund (UNFPA) spent around 2 per cent of their budget on ICT during this period, while the International Civil Aviation Organization (ICAO) spent about 7 per cent (CAD 2.7 million) of its annual budget on ICT in 2009-2010, although major ICT projects were funded through additional funds, in the amount of CAD 640.000 in 2009, and CAD 2.5 million in 2010. The World Meteorological Organization (WMO) spent about 3.4 percent (CHF 2.9 million) of its annual budget on ICT in 2010, while an additional CHF 3.2 million was spent on IPSAS implementation during the period 2008-2011.

20. ICT governance is an important factor in generating business value from ICT. A study on ICT governance was conducted by MIT Sloan School of Management's Centre for Information System Research (CISR). The study covered more than 300 enterprises in over 20 countries and concluded that IT business value directly results from effective IT governance. The research indicated that firms with superior IT governance have at least 20 per cent higher profits than firms with poor governance, given the same strategic objectives. [8]

21. Effective ICT governance is a critical factor for successful ICT operation in an organization; it ensures that the organization's ICT is aligned to and supports its strategies and mandate. To this end, the ICT governance mechanism should ensure that the decision-making process on ICT direction, strategy and investments are driven by business so as to enable close alignment of ICT with the organization's business needs. The ICT governance

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[5] A/65/491, para. 24.

[6] For further information on COBIT, see http://www.isaca.org/Knowledge-Center/cobit/Pages/Overview.aspx.

[7] Information based on responses to the questionnaire; the figures indicated are aggregates aimed at presenting an overview of the situation. They do not allow for specific conclusions to be drawn in respect of the organizations, bearing in mind the different mandates, structures, activities and operations of the organizations.

[8] See Peter Weill and Jeanne W. Ross, *IT Governance*, Harvard Business School Press, 2004, p. VIII; the research covered the period 1999-2003.

structure and processes should also guarantee the resolution of cross-cutting priorities and requirements at an organization-wide level, which is often a challenge in the United Nations system organizations which have federated and de-centralized ICT architectures and concomitant ICT resource allocations.

22. Effective ICT governance also contributes to better harmonization and coherence with respect to ICT security levels, ICT project management methodologies and generally ICT systems. Finally, an effective ICT governance structure facilitates appropriate awareness of the strategic importance of ICT among managers and staff, and promotes ICT as a strategic tool and enabler for enhancing organizational effectiveness and efficiency and facilitating change management.

C. Basic ICT governance structures and frameworks

23. There is no single ICT governance formula or framework to suit all the United Nations system organizations. Nevertheless, there are agreed common elements that form the basic structure of an ICT governance framework.

24. ICT governance mainly addresses three critical questions: What decisions must be made to ensure appropriate management and use of ICT? Who should make these decisions? How will these decisions be implemented and monitored?

25. The central element is the ICT governance committee or equivalent, composed of business managers providing overall guidance and direction on ICT at the organization-wide level. The committee or board is often supported by a technical committee which provides technical advice and support. The United Nations organizations[9] and those with regional and field offices also have local ICT committees in the organizations' substantive departments and/or regional and country offices.

26. Most organizations also have one or several working group(s) or task force(s) for certain major ICT programmes, for example, the working groups for each of the three strategic ICT programmes at the United Nations.[10] Finally, in addition to standing ICT governance bodies, separate ad hoc governance structures are established for major, large-scale and cross-cutting ICT projects, such as enterprise resource planning (ERP) implementation, which may comprise steering committees, project teams, working groups and task forces at different levels, as appropriate.

27. The organization's corporate ICT strategy forms an integral part of the basic ICT governance. Further, the CIO, CTO or Head of the ICT department, the ultimate responsible official for ICT in the organization to whom the CIO or equivalent reports to and Member States in the legislative bodies, i.e. with respect in deciding on and allocating ICT resources through the organization's programme budget preparation process for ICT, play an important role in governing the organization's ICT.

28. Given the various structures and mandates of the United Nations system organizations, ICT governance frameworks, including the ICT governance committee or equivalent, vary across the organizations.

D. ICT governance committees

29. The great majority of organizations have an ICT governance committee or equivalent in place. In most organizations, including the United Nations, UNDP, UNFPA, UNHCR, UNICEF, WFP and WMO, the ICT governance committee is a separate body composed of officers at the senior and executive levels representing all

[9] The ICT structures at OHCHR, UNCTAD, UNEP, UN-Habitat, UNOV, UNODC and UNWRA are governed by the ICT governance framework and the ICT strategy of the United Nations, established by the Office of Information and Communications Technology (OICT) of the United Nations Secretariat.

[10] These are knowledge management, resource management and infrastructure management.

parts of the organization and chaired by an executive manager.[11] Some organizations, such as UNESCO and ICAO, do not have separate ICT governance committees, rather their established management committees deal with ICT matters in addition to other organizational and managerial issues. At UNIDO, the Committee for Change and Organizational Renewal (CCOR), which was established in February 2010, provides strategic direction and oversight with regard to all change undertakings in the organization, including all ICT-related issues and governance frameworks.

30. The most crucial role and function of the ICT governance committee is to ensure alignment of ICT with the organization's business needs. The committee provides a forum and mechanism where business managers from all parts of the organization can meet to discuss ICT requirements and needs at the organization level; it therefore serves as a mechanism for the resolution of competing priorities at that level. This function gains particular importance due to the fact that the great majority of organizations have strong de-centralized and federated ICT structures, with various ICT units located in their major departments and programmes as well as in the organizations' regional and country offices. Without a central governance body dealing with cross-cutting issues at the corporate level, organizations risk having fragmented, inefficient and ineffective ICT structures.

31. At the time of the review, the Food and Agriculture Organization of the United Nations (FAO) and UNESCO were in the process of reforming their ICT governance frameworks. In this context, the organizations also reviewed the composition and terms of reference (TOR) of their ICT governance committees or equivalent, and some departments had not yet established their ICT governance committees or they were not fully operational. Following a review of its ICT governance structure, UNDP is currently revising the TOR of its ICT governance body, the ICT Board.

32. Therefore, in the Inspectors' view, **the executive heads of FAO[12] and UNESCO should ensure that their ICT governance committees or equivalent are established and operational without undue delay, so as to make full use of ICT in sustaining the organizations' mandates and objectives.**

1. Composition of the ICT governance committee

33. ICT governance is the responsibility of senior management. The composition and chairmanship of ICT governance committees or equivalent varies across the United Nations system organizations. Membership usually includes business managers at different levels from various parts of the organization, including regional and country offices, as appropriate. The committee is chaired by an executive officer sometimes the deputy executive head of the organization, in other cases the director of administration or equivalent.

34. The CIO or Head of ICT is also represented on the ICT governance committee, as an ex officio member or as secretary of the committee.[13] This ensures that the CIO can provide administrative and technical support to facilitate the work of the committee; it also ensures that the CIO is informed of the committee's discussions and decisions.

35. The Inspectors noted that the composition of the committees in some organizations does not ensure adequate representation of business managers from all parts of the organization, including from the various

[11] UNDP, UNFPA, UNOPS, UN Women and UNU also have a unique ICT governance mechanism, whereby all Atlas agencies are members of the Inter-Agency Atlas Governance Group (IAAG). The Group meets regularly to review common Atlas-related issues, and it is an important aspect of ICT governance in those organizations where strategic issues impacting the Atlas agencies are escalated to the Executive Sponsor Group which comprises Assistant Secretary-Generals of the three core Atlas agencies (UNDP, UNFPA and UNOPS).

[12] FAO's new Information Technology and Knowledge Management Governance Framework was approved by its Director-General on July 18th, 2011 and implemented in September 2011.

[13] Practices in the organizations differ: for example at the United Nations and UNHCR, the CIO is an ex officio member of the ICT-EC and the UNHCHR ICT Governance Board, respectively; at WFP, the CIO is a member of the MISSC; while at UNDP, the CTO performs the role of secretary to the UNDP ICT Board.

substantive departments and programmes at headquarters and in regional and country offices for organizations with a strong field presence. The Inspectors also learned that the committee members are not in all organizations business managers at the appropriate senior level.

36. In the Inspectors' view, **it is of utmost importance that all or at least the major business owners from all the major services of the organization, including the regional and country offices, as appropriate, are represented in the organization's ICT governance body, so as to ensure an effective ICT governance committee or equivalent, as a forum where business owners can discuss and provide direction and guidance on ICT at the organization level.**

37. Furthermore, the members of the committee should be business managers at the appropriate senior level, preferably the most senior level. Only then can they adequately represent their departments and programmes, with the authority to present and defend their ICT needs and requirements within the committee, thereby allowing the committee to serve as a forum for discussion and decision-making on ICT matters, including the resolution of competing ICT priorities, requirements and needs at the organization level. That would also ensure that all business managers are regularly updated on ICT issues, as well as on ICT requirements, the status of major ICT initiatives and investments in the organization.

2. Leadership of the ICT governance committee

38. The Inspectors believe that an organization's ICT governance committee should be chaired by an executive manager, preferably a deputy executive head of the organization or an executive officer with similar status, function or authority. This would ensure that inputs and views of the executive management are brought into the discussions and work of the body, and at the same time, executive management will be apprised of and periodically updated on its work, discussions and decisions. This would also contribute to raising awareness at the executive management level of the strategic value and importance of ICT for the organization, and leverage ICT governance at the highest echelons of the organization.

39. The Inspectors consider the ICT governance committees, or equivalent, in the FAO, United Nations, UNHCR, WFP and WMO as good examples. The committees are chaired by the deputy executive heads of the respective organizations and their membership comprises senior managers from all services of the organizations, as well as adequate representation of offices away from headquarters and on the ground. Outside the United Nations system, the IMF also serves as a best practice, as its ICT governance body, the Committee on Business and Information Technology (CBIT) is chaired by one of the Fund's three deputy managing directors and composed of senior management from the different departments. Such chairmanship and composition of the ICT governance committees or equivalent in those organizations ensure the involvement of senior and executive management in ICT issues, help to enhance alignment of ICT with the organizations' respective business needs, including resolving competing ICT needs and priorities against the background of limited resources at the organization-wide level, and, overall, increase recognition of the strategic value of ICT within the organization.

40. The implementation of the following recommendations is expected to enhance the effectiveness and efficiency of ICT governance at the corporate level, based on best practice.

Recommendation 1

The executive heads of the United Nations system organizations should ensure that the ICT governance committee, or equivalent, is composed of the most senior business managers representing all major services of the organization, and chaired by an executive manager, preferably at the level of deputy head of the organization or equivalent.

3. Terms of reference of the ICT governance committee

41. The roles and functions of ICT governance committees vary among the United Nations system organizations. In general, their functions include, inter alia: reviewing and endorsing the ICT strategy; reviewing and providing advice on the investment portfolio and ICT priorities, including IT investment priorities; providing oversight on ICT investments, including changes and post-implementation reviews of key ICT initiatives; providing advice on and endorsing ICT policies, standards and procedures; and providing general advice and guidance on ICT matters.

42. The Inspectors are of the opinion that the ICT governance committee of an organization plays a key role in providing overall guidance and serves as a forum for discussion and consideration of ICT issues at the organization level and on a cross-cutting scale. This is of particular significance, as most organizations have rather decentralized and hybrid ICT structures comprised of both a central IT department as well as IT units located in the various substantive departments and programmes, as well as in regional and field offices.

43. To avoid problems, such as fragmentation, inefficiencies, duplication of work, application of different levels of IT standards – such as security standards –, incompatibility of systems, inter alia, within an organization, a forum or mechanism is needed where business managers from all services of the organization and ICT can meet to discuss and consider ICT matters at the corporate level. This is best achieved through a well-functioning ICT governance committee, whose TOR and role also extend to cross-cutting ICT issues, such as fostering the application of harmonized and common ICT standards, systems compatibility, facilitation of knowledge and sharing of information on ICT. The committee should also serve as a forum where the competing ICT demands of the various departments and programmes could be discussed and considered at the corporate level, so as to allow for prioritization based on the Organization's key ICT priorities and needs. The committee should provide overall guidance on ICT at the organization level, so as to ensure close alignment of ICT with business needs and priorities at the organization level instead of at the departmental level.

44. At the same time, participation of senior business managers in the committee and adequate chairmanship of the body at the executive level is essential. Reference is made to Recommendation 1 above in this respect.

4. Effectiveness of the ICT governance committee

45. In the Inspectors' opinion the following areas are essential and would enhance the functions of the ICT governance committee.

(a) Raising awareness of the strategic value of ICT

46. The strategic value and importance of ICT is not fully recognized, that is the common assertion the Inspectors learned during their meetings and interviews with both ICT and business managers. It was noted to the Inspectors that given the rapidly changing technologies, the complexity of the operating system, the growing dependence on ICT for the organizations work and the high requirement from various users, any decisions on administrative, operational or even programmatic issues have an ICT component and/or implications. Also brought up were the substantial costs for ICT in the organizations, ranging from two to up to 13 per cent of the organizations' annual budgets. It was noted that single major ICT initiatives, such as the implementation of ERP systems, have cost implications of several millions of US dollars each.

47. The Inspectors noted the urgent need to ensure that ICT aspects and elements are fed into the debate and decisions on administrative, managerial or operational issues with ICT implications. This would guarantee close alignment of ICT with business as well as raise the value of ICT as an enabler, strategic asset and tool for improving cost-effectiveness. This could best be achieved through a well-functioning ICT governance committee, serving as a forum where all major business managers can meet to discuss their ICT needs.

48. The Inspectors share those concerns and concur with the said considerations. **The Inspectors are of the view that the ICT governance committee is an excellent vehicle to leverage the profile of ICT within an organization. It would also ensure that business drives ICT, and not the other way around, making ICT a tool for achieving the organization's mandate and goals and for increasing effectiveness and efficiency.**

(b) Increasing the efficiency of the ICT governance committee

49. While most ICT governance committees function properly in general, the Inspectors were informed that inefficiencies do exist in some cases. Improvement is notably needed in the following three areas: (a) frequency of meetings as stipulated in the TOR is not always respected; (b) members would not participate in adequate numbers or would be represented by an alternate, often junior official; (c) documentation for the meetings is sometimes not provided in time or is not adequate – in some cases, the documentation did not contain all the necessary information, in others, it was too comprehensive and bulky or too technical in nature, thereby hampering discussions and decisions within the committee.

50. The Inspectors consider that these issues need to be addressed. They are also of the opinion that, given the essential role that the ICT governance committee plays with regard to effective ICT governance, its functioning and performance should be reviewed and assessed periodically, at least every three years, in order to ensure its effective functioning and to explore ways to further enhance its work.

(c) Strengthening communication between ICT and business

51. Communication and dialogue between ICT and business are of vital importance for any organization wishing to fully tap the potentials of ICT. Such communication is lacking or is inadequate in some organizations. In one organization, the ICT officers expressed satisfaction with the ICT-business communication, asserting that they met the needs and service requirements for business, while several directors (D2 level) stated that they had difficulties communicating with ICT. Although they have fully conveyed their needs to ICT, they were told by ICT officers that their requests and needs could not be met and they would have to take what ICT could offer. As such, they felt that their business needs were not adequately taken into account and neglected.

52. The Inspectors also observed various good examples of successful dialogue between ICT and business. For instance, at the World Intellectual Property Organization (WIPO), one sector proposed a major revamp to an application for selling WIPO publications and periodicals online. After a full examination of the project with ICT, it was recognized that the investment could not be offset within a reasonable period by the income generated through the online sales. As a consequence, other mechanisms were explored including using market bookstore chains to sell their books, periodicals and other publications.

53. Close communication and cooperation is particularly essential for major ICT projects requiring extensive input and work from both business and ICT, as in the case of implementing ERP systems. The success of such projects depends, among other factors, especially on a close and effective partnership, interaction and cooperation between the ICT and the business departments. To achieve such close cooperation and communication, the roles, responsibilities of ICT and business must be clear.

54. In the Inspectors' view, **further measures should be taken to strengthening communication between ICT and business. This in turn will facilitate and enhance the work and functioning of the ICT governance committee.**

(d) Promoting information sharing

55. Information sharing, including the sharing of documentation, such as minutes, decisions, as well as communication in general among the ICT governance committee and other standing bodies of the ICT governance framework, such as technical ICT advisory committees, working groups or task forces, was

insufficient in some instances. This has led to the situation whereby the advisory and technical bodies, in some cases, could not properly fulfil their mandate and vice versa.

56. Similarly, there is still a potential for better communication and information sharing among the standing ICT governance bodies, advisory and technical bodies, workings groups with the various ad hoc bodies and working groups established for specific major ICT projects, such as the implementation of ERP systems. Overall, there is also still room for improvement in sharing and communicating the decisions and discussions of the ICT governance committee and the other bodies, as appropriate, to management and users on a continuing and timely basis.

57. In the view of the Inspectors, **the executive heads of the United Nations system organizations should ensure that all ICT technical and advisory bodies, working groups and task forces are functioning properly, including holding regular meetings with adequate member participation, communicating and sharing the decisions and developments with management and users on a regular and timely basis.**

58. The implementation of the following recommendations would enhance the effectiveness and efficiency of ICT governance.

Recommendation 2
The executive heads of the United Nations system organizations should ensure that the ICT governance committee, or equivalent, is convened regularly with the fullest possible participation of its members, adequate documentation is provided in a timely manner and meeting records are kept, so as to make full use of the committee's work and function.

Recommendation 3
The executive heads of the United Nations system organizations should ensure that the function and performance of the ICT governance committee, or equivalent, is reviewed and evaluated regularly, but not less than every three years, so as to ensure its effectiveness and facilitate improvement.

E. Chief Information Officer (CIO)

59. The level, reporting line and functions of the most senior ICT officer varies across organizations. Different terminology is also used for the title, such as Chief Information Officer (CIO), Chief Information Technology Officer (CITO), Chief Technology Officer (CTO), Director or Chief or Head of IT.

60. In some organizations, the CIO, or equivalent, reports to the deputy executive head of the organization (for example FAO, United Nations, ITU, UNHCR, UNICEF and WFP), while in others, the CIO reports to the director of administration, or equivalent (for example ICAO, UNEP, UNFPA, UNIDO, UNODC and WMO).

61. Also the function of the CIO, or equivalent, varies among the different organizations also, depending on the organizational and ICT structure of the respective organization. Most organizations have a decentralized and hybrid ICT structure made up of a central IT department and IT units located in the various substantive departments and programmes, as well as in regional and some field offices.

62. In organizations with a more centralized ICT structure and a strong ICT department, the CIO usually has more authority over corporate ICT issues and services provided to the entire organization. In contrast, in some strongly federated organizations (for example IAEA and ITU) or organizations with a strong field presence (such as UNDP and WHO), the function and authority of the CIO are limited to providing basic ICT services and

support in line with the mandate of the organization's ICT department. Specialized ICT services for substantive departments and programmes are provided by the IT units of those departments and programmes. Such units usually report and are accountable to the respective department or programme head (or the head of the relevant regional or field office). Those IT units are also funded through the budgets of the respective departments, programmes, regional or field offices, and not by ICT programme budget of the organization.

63. The particularities of each UN system organization and its specific organizational structures make it difficult to compare in detail the situation, function and TOR of the CIO or equivalent in the organizations. However, the Inspectors made two main observations: the great majority of organizations have – with different degrees – a rather federated and de-centralized ICT structure, which was seen problematic on one hand but also beneficial on the other by the managers and officials interviewed; there have been attempts by some organizations in recent years towards more centralizing their ICT infrastructures, including strengthening their ICT departments.

64. Most organizations have a hybrid structure comprising both a central IT department and IT units located in and serving the organization's substantive departments, programmes and regional and field offices. The officers interviewed indicated that this type of structure creates problems, including fragmentation, inefficiencies, duplication of work, the application of different IT systems and levels of IT standards, for example security standards, within the organization. At the same time, several business mangers indicated that they were not comfortable fully relying on a centralized IT department; they felt that the dedicated IT units know the particular department's specialized IT systems (for example the systems used in human resources or for procurement, supply change, etc.) and have built special knowledge and expertise. As they are closely connected to the departments, they know the particular business needs and can respond in a timely manner to requests. Furthermore, in some organizations (for example IAEA, ITU and WIPO), certain confidentiality requirements and the independence of some departments and programmes require separate IT units and systems.

65. Organizations such as FAO, the United Nations, UNFPA, UNHCR and WFP have made significant efforts and progress towards centralizing their ICT structure over the past years. Basic ICT services (such as IT infrastructure and help-desk services) are ensured throughout the organization by the ICT department; ICT project management procedures and methodology have been harmonized across the organization, including the establishment of an ICT project management function within the ICT department; steps have been taken to harmonize the IT architecture and infrastructure; the application of harmonized standards have been advanced. UNHCR is increasingly outsourcing central, basic IT services to external service providers (private and UN-ICC), which may lead to cost savings. Following the recommendations of its root and branch review, FAO has also moved towards a centralized IT and is assessing the options for more cost effective delivery of basic services, within the limitations of the United Nations protocol on privileges and immunities. The ICT centralization process in those organizations is often accompanied by the establishment of focal points or liaison officers for the major departments and programmes, so as to increase communication and interaction with business, and alignment with the needs of business owners, as has been done in FAO, the United Nations, UNHCR and WIPO.

66. The implementation of ERP systems (UMOJA in the United Nations and ATLAS in UNDP and UNFPA) has further increased the trend towards more centralized ICT, which, in turn, has led to new challenges and risks, relating for example to connectivity and security.

67. ICT centralization in those organizations is an ongoing process. The Inspectors were informed that, in some organizations, there are resource gaps with regard to the new cross-cutting functions of the ICT department, such as harmonizing ICT policy, architecture and systems and setting standards.

68. Other organizations (such as UNICEF) considered a federal model as preferable and the most suitable structure, if supported by a strong regulative environment, formalized matrix management and a strong centralized headquarters function for strategy, standardization, policy and practice. For field-oriented organizations in particular, the ultimate goal is local impact, agility and responsiveness for optimal fulfilment of the core mandate. In this respect, UNICEF is in the process of decentralizing and strengthening a number of its

non-headquarters ICT services, while building a strong centralized headquarters function for strategy, standardization and policy.

69. The Inspectors do not wish to make any specific proposals as to whether organizations should adopt centralized or de-centralized, federated ICT structures. Both models have their pros and cons, as outlined above, and it is rather up to the organizations to decide, taking into account their specific structures, mandates and needs.

70. However, the Inspectors noted that in some organizations the federated systems have led to fragmentation in terms of IT systems, infrastructure and architecture. For instance, in some cases, the IT system was not compatible or able to communicate with each other. Furthermore, in many organizations, different polices and standards are applied throughout the organization, which, for example in the case of IT security standards, can have severe implications for the whole organization. Through the wide use of intranets, extranets, mobile devices, and so on, low IT security levels in one part of an organization may be a threat to other parts of the organization. Finally, the Inspectors noted that information and knowledge sharing on ICT is still weak in several organizations. For instance, there have been cases where a department commissioned the development of specific IT systems which had already been developed and in use in other departments, resulting in duplication of work and inefficient use of resources.

71. The Inspectors believe that **the function and role of the ICT department or the CIO should, under the overall direction and guidance of the ICT governance committee and the officer ultimately responsible for ICT in the Organization, be extended to include cross-cutting functions, such as harmonization of ICT systems, architecture, standards and policies, as well as information and knowledge sharing on ICT within the Organization, as appropriate**. This would strengthen ICT governance at the corporate level, resulting in more effective and efficient ICT.

72. At the same time, given the importance of ICT and the fact that it is closely linked with and indispensable for all major operations and work processes in the organizations, as well as the significant cost of ICT, the CIO, or equivalent, should be at an appropriate level in the organization so as to have direct access to senior and executive management. This would ensure that ICT aspects are considered and fed into the discussions and decisions on all relevant administrative processes, work flows and procedures, and ensure close alignment of ICT with business needs. It would also facilitate leveraging ICT as an enabler and a tool for cost savings and innovation. Good practices in this respect are those organizations, where the CIO, or equivalent, reports to the deputy head of the organization, such as in the United Nations, UNHCR, ITU and WFP.

73. The implementation of the following recommendation would enhance the effectiveness and efficiency of ICT governance.

Recommendation 4
The executive heads of the United Nations system organizations should ensure that the Chief Information Officer (CIO), or equivalent, should be placed at an appropriate senior level with overall responsibilities and authority, and have access to executive management.

III. STRATEGY

74. ICT strategy is a crucial component part of ICT governance. It serves as a blueprint and guideline on the future direction and performance of ICT for the relevant time period (usually 4 to 5 years), providing the foundation for achieving a comprehensive vision by enhancing existing ICT efforts and launching new ICT initiatives that will assist the achievement of the organizations' goals.[14]

[14] See A/62/793, para. 4.

75. Its purpose is to deliver value through the effective use of ICT. An ICT strategy is expected to enhance an organization's effectiveness by aligning ICT with business needs and improving efficiency through timely adoption and use of new technologies. The strategy usually includes ICT key priorities, investments and deliverables for the specified time period in support of and aligned to the organization's mandate, strategic plans and operations. It often also outlines the organization's ICT governance and management framework.

76. The great majority of organizations have ICT strategies. At the time of the review, several organizations (such as FAO,[15] UNESCO and UNIDO) were in the process of preparing and endorsing their ICT strategies in the context of their ongoing reform. UNICEF is in the process of reviewing and revising its current ICT strategy, and aims to finish this work in the first quarter of 2012.

A. Preparation, endorsement and regular update of the ICT strategy

77. Effective ICT governance cannot be achieved without a strategic document outlining the organization's key ICT priorities, investments and deliverables for a medium-term period. The ICT strategy also serves as the central and essential tool and mechanism for ensuring alignment of ICT with the organization's business needs and contains the basic ICT governance frameworks, including the role and function of the ICT governance bodies, technical and advisory bodies and working groups, and hence the modalities and procedures for the ICT-related decision-making process. Therefore, in the Inspectors' view, **those organizations which have not yet adopted an ICT strategy should do so without undue delay.**

78. Not all of the organizations regularly review and update their ICT strategies.

79. In order to be closely aligned with and reflect the organization's mandates, business needs and priorities, the ICT strategy should be periodically reviewed and updated with a view to addressing shifting priorities and changes in the focus of the organization's work or in terms of funding and resources available for ICT, as well as to keep up with technological changes and developments. Good examples of organizations periodically revising and updating their ICT strategies are ILO, UNDP, UNFPA and UNHCR.

80. The process of updating the ICT strategy **should follow the same steps as the process for preparing and endorsing the original strategy. In particular, the full and active involvement of many levels of the organization, including senior and executive managers, business owners and users should be ensured.** This would be best achieved through an extensive formal and informal consultation process of ICT and business.

81. The revised strategy should also be endorsed by the organization's ICT governance committee, or equivalent, and approved by the executive head of the organization or a responsible officer with the relevant delegated authority. Besides ensuring close alignment of ICT with business in strategy and operations, such procedures encourage co-responsibility between ICT and business, and also reinforce the important role that senior and executive management play with regard to defining the ICT strategy. They also further reflect the fact that the ICT strategy updating process is a cross-cutting activity that supports different organizational objectives and functions, and that it is driven by the business owners.

82. Good examples with regard to the strategy preparation process were observed at FAO, WIPO and the United Nations. During the preparation of WIPO's IT strategy, extensive consultations with all departments were conducted through meetings, workshops and information sessions, so as to better understand and obtain inputs on priorities, business needs as well as risks, and on how ICT could help to satisfy those needs and address the risks. At the United Nations, the strategic planning process began with a broad-based exercise aimed at identifying key ICT needs. To this end, a series of strategic planning activities, including executive interviews, an organization-

[15] The FAO Director-General approved the Organization's new IT Strategy on July 18, 2011, which is in the process of being implemented.

wide ICT survey, consultations with permanent missions, technology research and a strategic planning retreat for senior ICT managers were undertaken.[16]

83. At ITU, UNCTAD, UNECE, WFP and WMO, the ICT strategy is endorsed by the executive head of the organization, while at UNHCR it is endorsed by the deputy executive head. In some organizations, such as the United Nations, the ICT strategy has been endorsed by the legislative body; while in other organizations, the ICT strategy is shared and submitted to the legislative body upon request (for example UNICEF and UNFPA) or for information purposes (as at WIPO).

84. The Inspectors consider that **the ICT strategy should be an integral part of the documentation made available to Member States in the legislative bodies, so as to allow them to prepare and take the necessary IT-related decisions.** The strategy should provide in particular for key ICT initiatives and investments with coherent, concrete, prioritized and coordinated projects, including indication of a realistic time frame for implementation, as well as resource implications. Member States should not only be provided with information and resources needs for certain major high-cost ICT projects and investments, but should also be kept abreast of ongoing and planned key ICT priorities, needs, initiatives and investments as outlined in the organization's ICT strategy. In that way, they would be in a position to make well-founded decisions on ICT prioritization and the corresponding resource allocations. This would allow for a more strategic perspective and approach to ICT at the corporate level, and hence reduce fragmentation and enhance alignment and effective and efficient use of resource allocation to ICT in the organizations. It would also ensure involvement by the ultimate business owners, the Member States.

85. The implementation of the following recommendations would enhance accountability and the effectiveness and efficiency of ICT governance.

Recommendation 5
The executive heads of the United Nations system organizations should ensure that corporate ICT strategies are prepared, endorsed and periodically reviewed and updated, in order to ensure that they are closely aligned to the organization's business needs and priorities and yield value for their ICT investment.

Recommendation 6
The legislative bodies of the United Nations system organizations should request the executive heads to present the corporate ICT strategies to Member States for their information and support.

B. Alignment of the ICT strategy with the organization's strategic plans

86. Not all the ICT strategies are aligned closely enough to the respective organization's medium- and long-term strategic plans. Consequently, these organizations face potential risks that their ICT might not fully sustain and support the business needs and priorities of the organization as identified and outlined in their strategic plans.

87. The Inspectors are of the view that organizations should pay due attention when preparing and updating their ICT strategies that they are closely aligned to their medium- and long-term strategic plans. This would best be done if the ICT strategy makes specific reference to and details how the key ICT priorities, initiatives and

[16] See A/62/793, paras. 6 to 12.

activities of the ICT strategy respond to and support the corresponding strategic goals of the organization concerned, as contained in the overall medium- and long-term strategic plan(s).

88. Good examples include the ICT strategies of UNDP, UNFPA and ITU. For instance, UNFPA's ICT strategy for 2011-2013 specifically links and aligns its ICT strategic goals and objectives to UNFPA's strategic plan, as adopted by its Executive Board. The actions contained in ITU's current ICT strategy is also linked and aligned to its 2009-2012 operational plan for the General Secretariat. UNDP has implemented the practice of formalizing a multi-year ICT Strategy to support the Strategic Plan of the Organization. The ICT Strategy (or IM Strategy) has been endorsed by its Operations Group chaired by the Associate Administrator.

89. The implementation of the following recommendations would enhance the effectiveness and efficiency of ICT governance.

Recommendation 7
The executive heads of the United Nations system organizations should make sure that their ICT strategies are closely aligned to the organization's medium- and long-term strategic plans or equivalent, so as to ensure that ICT sustains and supports the organization's business needs and mandates.

C. Implementation and monitoring of the ICT strategy

90. The Inspectors also considered the performance of ICT and the implementation and monitoring of the ICT strategy.

91. In various organizations, the ICT strategy and its complementary documents, such as roadmaps and implementation plans, do not indicate priorities or specific, tangible and time-bound deliverables and performance indicators. Good practices were observed in some organizations (for example UNFPA and ITU) whose ICT strategies set out detailed deliverables and corresponding timelines, which allow close monitoring. Other organizations (such as UNHCR and UNDP) have complemented their ICT strategies with roadmaps (UNDP) or strategic and operating plans (UNHCR) which outline the concrete actions, initiatives and activities to be put in place within given time frames in order to fulfil the ICT strategies.

92. Not all the organizations have translated the key priorities and initiatives identified in the ICT strategy into the organization's or the individual department or unit's ICT budgets and work plans. However, in some organizations good examples where observed. For instance, at WIPO the key priorities and initiatives contained in its ICT strategy have been translated and mapped into the organization's ICT programme budget and the ICT department's biennial work plans.

93. Some organizations do have those mechanisms in place to facilitate implementation and monitoring of their ICT strategies. The absence of such a mechanism impedes the implementation of the ICT strategy and accountability as to which department, office or officer is responsible for the implementation of a certain activity or initiative outlined in the ICT strategy is blurred. Finally, the implementation of the ICT strategy may be hampered by funding gaps, as no or insufficient resources were allocated for certain ICT activities and priorities identified in the strategy in the organization's ICT programme budgets or the budgets of the respective substantive departments and programmes.

94. The implementation of the following recommendation would enhance the effectiveness and efficiency of ICT governance, as well as controls and compliance.

Recommendation 8
The executive heads of the United Nations system organizations should establish monitoring mechanisms for the implementation of their ICT strategies, ensuring that the ICT strategy and its implementation roadmap, deliverables and performance indicators are continuously monitored and regularly reported on to the ICT governance committee, or equivalent.

IV. RESOURCES AND OTHER ICT ISSUES

A. Transparency of ICT costs

95. The Inspectors noted that the great majority of the United Nations system organizations had difficulties indicating their total annual resource requirements for ICT, given their hybrid structure comprised of a central IT department and IT units located in the various substantive departments and programmes as well as in regional and field offices. In particular, strongly decentralized and field-based organizations have difficulty quantifying the total cost of ownership for ICT, as budgets are managed separately by the respective substantive departments and regional and field offices. In the case of UNDP, that amounts to 166 offices around the world. In addition, ICT cost components are often already directly budgeted into the organization's substantive programmes and activities.

96. Further, total ICT costs also include the resource needs for particular medium- and large-scale ICT projects, such as the implementation of ERP systems or other new IT systems, which are often financed through the organization's capital budget over a period of a number of years.

97. Based on the responses to the questionnaire, the approximate total ICT costs in the organizations range from about two to about 13 per cent of the organization's total annual budget; most organizations spending about four to seven per cent of their total annual budget for ICT. This figure does not include expenditure for particular ICT initiatives and projects, such as ERP systems, which could be as high as the recurring annual ICT costs.

98. As indicated above, there is a trend towards a certain centralization of ICT in some organizations. This would lead to more transparency with regard to ICT costs, as such cost would, to a great extent, correspond to the programme budgets of the organizations' ICT departments, and only the costs for major ICT initiatives and projects would have to be added. Furthermore, some organizations have adopted or are in the process of preparing ICT cost catalogues for their basic ICT services. This will also enhance transparency and clarity regarding the cost of ICT. A similar exercise is currently underway at the HLCM and the ICTN on a system-wide level. Finally, the implementation of International Public Sector Accounting Standards (IPSAS) will further assist the United Nations agencies with identifying their IT costs.

99. In the Inspectors' view, **effective ICT governance at the corporate level cannot be achieved without a clear picture of the total ICT costs incurred by the organization.** More detailed information on ICT costs, including, at a minimum, the total annual ICT costs incurred, the portions of recurring and ad hoc annual ICT costs, details and a breakdown of costs for certain ICT activities, specific systems and projects, the cost implications of proposed future IT investment and initiatives, is needed to ensure effective ICT governance based on a strategic, results-based and cost effective approach. Internal and external decision-makers must have information on cost implications so as to better take into consideration those cost factors in their decision-making and prioritization process. The current situation also impairs accountability and transparency of ICT governance.

100. In this respect, the Inspectors also refer to recommendation 1 of a previous JIU report on ICT hosting services in the United Nations system (JIU/REP/2008/5), which proposed that "The executive heads of the United Nations system organizations should work with HLCM towards defining a consistent method of recording ICT

expenditures/costs to facilitate cost-benefit analysis of ICT services." The Inspectors acknowledge, in this respect, the work done in some organizations, as well as in the HLCM and the ICTN on the costing of ICT services. However, they encourage said organizations as well as the HLCM and the ICTN to conclude and finalize their work without undue delay.

101. The implementation of the following recommendation would enhance accountability and the effectiveness and efficiency of ICT governance.

Recommendation 9
The executive heads of the United Nations system organizations should strengthen their efforts in keeping track of the ICT costs in their organizations, including the total annual recurring and ad hoc ICT costs, as well as details on the main cost elements.

B. ICT investments

102. The decision-making process on ICT investments varies across the organizations. In most organizations, the decision-making process depends on the financial volume of the projects: for small ICT projects, the decision-making authority would be the CIO and/or the heads of substantive departments or regional or field offices; medium-size projects would need endorsement from the head of the department and, in some cases, the organization's ICT governance committee, as well as the approval of senior managers and/or the highest authority on ICT or the head of the organization; for very large and cost-intensive projects, ad hoc project governance structures, comprising steering and management committees, working groups and so on have to be established, and funding for those projects would be sought from Member States or they may be funded from the organizations' capital budgets.

103. Most organizations have established project management methodologies, typically based on and following Prince2. However, those methodologies are often not consistently applied across the organization, given the decentralized and federated ICT structures of most of the organizations. In some cases, different methodologies are in place and used by different organizational departments and units within the same organization. This results in the application of different assessment and decision criteria for ICT investments/projects, as well as different approval and quality assurance requirements, requisites for technical specifications, such as ICT security standards/requirements, among others.

104. Therefore, in the Inspectors' view, **the executive heads of the United Nations system organizations should make an effort to further develop and endorse ICT project investment methodologies and guidelines applicable to all the departments and services of their respective organizations.** The guidelines should, in particular, include the requirements for submitting business cases for all IT project proposals, supported by the adequate documentation, and including a lifecycle cost-benefit analysis and outlining funding needs and sources. They should also include certain project investment assessment criteria to guide the selection process, so as to allow for a fair and transparent process, as well as the requirement to indicate how the proposed project would support the overall corporate ICT strategic goals. The guidelines should also include provisions on project implementation and a mandatory post-implementation review of major IT projects and investments.

105. In most of the organizations, the Inspectors noted the absence of a central project portfolio, listing all the ICT projects implemented within the organization. This impedes decision-making on ICT investments and priorities at the corporate level, favouring ad hoc rather than strategic decision-making, and could also lead to duplication or incompatibility of systems, providing grounds for inefficiencies.

106. **A project management office or function should be established in the ICT department, taking into account existing resources, to assist in the administration of the implementation of project methodologies**

and guidelines, as appropriate. Furthermore, **a central project portfolio, comprising all ICT projects implemented within the organization should be established and regularly updated.**

107. Good examples of the above were observed at FAO, UNDP, UNICEF, United Nations, WIPO and WFP. For instance, the United Nations has established a central PMO within OICT's Strategic Management Service, aimed at ensuring alignment of ICT investments with organizational priorities. The three primary functions of the PMO that span the full lifecycle of a project, from business justification through benefits realization, include enterprise portfolio management (EPM), project management support and project benefits assessment. Similar functions have also been established at WFP and WIPO. Those organizations are in the process of establishing an ICT project portfolio to keep track of existing ICT infrastructure and systems.

C. ICT performance and oversight

108. Effective ICT governance also requires performance management processes and structures to ensure timely, objective and measurable performance monitoring of ICT operation and projects, and their alignment to business needs and priorities.

109. COBIT ME.4.6 control objective[17] requires confirming that (i) agreed-upon IT goals have been met or exceeded; (ii) progress toward such goals meet expectations; and (iii) when objectives have been missed or progress is not expected, management takes remedial action. It also provides for reporting on relevant portfolios, programmes and IT performance to enable senior management and governing bodies to review progress with regard to meeting identified goals. Measuring IT performance should be a key concern of business and IT executives, as it demonstrates the effectiveness and added business value of IT.

110. ICT performance measurement takes place at different levels in the organizations and through various mechanisms. The performance of the central ICT department and other ICT units is measured through common performance measurement tools in place in the organizations. Most organizations also conduct periodic ICT satisfaction surveys, and post-implementation reviews are conducted for certain major ICT investments and projects.

111. However, in some organizations there is a lack of ICT performance assessment at the organization level, in terms of delivering added value as expected and outlined in the organization's ICT strategy, and hence ensuring that ICT is closely aligned to and sustaining the organization's business needs and priorities at the corporate level.

112. In various organizations, the key deliverables and priorities, as identified and outlined in the ICT strategy, are not or are inadequately reflected in the TOR or job descriptions, and the corresponding performance evaluations of relevant staff, in both the central ICT department and the other ICT units and programmes of the organizations. The Inspectors are of the view that **the terms of reference and performance assessment for staff should include and be linked to the key corporate ICT priorities and needs as outlined in the organization's ICT strategy, so as to ensure close alignment of the ICT function and services and facilitate monitoring of ICT performance in this respect.** Reference is also made to recommendation 7 above.

113. The Inspectors were informed that, in particular, regular post-implementation or peer reviews of ICT investments and projects are not regularly conducted. This was considered a major drawback, as it did not allow the assessment of whether the objectives linked to the IT investments were achieved or whether the viability of the relevant related cost-benefit analyses and estimations were correct. It also impedes learning lessons for future ICT projects. This problem was also highlighted in many of the audit and evaluation reports reviewed by the Inspectors.

[17] For further information on COBIT, see http://www.isaca.org/Knowledge-Center/cobit/Pages/Overview.aspx.

114. The implementation of the following recommendation would enhance controls and compliance as well as the effectiveness and efficiency of ICT governance.

Recommendation 10
The executive heads of the United Nations system organization should ensure that post-implementation reviews of major ICT investments and projects are conducted in line with the organization's ICT investment methodologies and policies.

115. ICT is subject to the organization's internal and external oversight function. The Inspectors noted that the organization's ICT operations were adequately covered and subject to regular audits and evaluations.

116. However, the Inspectors also noted that the oversight recommendations were not always fully implemented and in a timely manner. They therefore urge the executive heads of the organizations to speed up their implementation. Furthermore, the Inspectors consider that it would be useful for the ICT governance committee to periodically include in its agenda the main issues raised in the ICT audit and evaluation reports of its work, in particular those having an organization-wide dimension and impact.

D. ICT risk management

117. The United Nations system organizations are at different stages of ICT risk management, with most of them either in the process of preparing policy and framework documents or undertaking pilot or first-phase exercises. ICT risk management is either led by the ICT departments, or in several organizations, it is part of the organization-wide implementation of enterprise risk management (ERM).

118. Some organizations (such as ITU, UNDP, WFP, and WIPO) have already established risk registers which also cover ICT risks. However, most (e.g. FAO, UNICEF and WMO) are still in the process of developing ERM models and methodologies. Besides the information gathered in this review, the recent JIU report on the implementation of enterprise risk management (ERM) in the United Nations system organizations (JIU/REP/2010/4) also provides a good overview of the topic.

119. Although progress has been made in ICT risk management, there is still room for improvement, as identified during the meetings with officers and as noted in the various internal and external audit and evaluation reports.

120. In the Inspectors' view, effective ICT risk management should provide for periodic risk assessments at both the strategic global level and the system- specific levels, as well as for major future projects. Risk assessments of the ICT structures in regional and country offices should also be undertaken. The **United Nations system organizations should establish and regularly update ICT risk registers or catalogues covering all parts of the respective organization.** Finally, risk assessments could serve as the basis for formulating IT security strategies and policies as well as business-continuity and disaster-recovery plans.

121. Information on ICT risk and ICT risk assessments and catalogues should be considered by the ICT governance committees, insofar as they concern risks with implications for ICT at the organization level, such as those linked to the implementation of a new ERP system, for example, or to other major ICT systems used throughout the organization.

E. IT security

122. ICT security plays an increasingly important role given technological development, the widespread use and the indispensable nature of ICT in the organizations. ICT security is of particular importance to the United Nations system organizations as most of them (in particular United Nations, IAEA and WIPO) handle very sensitive and confidential information.

123. The level and quality of ICT security management varies across organizations, although most follow ISO 27001 and ISO 9001. Their IT security activities include preparing and updating ICT risk registers; conducting information security architecture reviews; vulnerability assessments of major applications and systems; IT awareness training; mandatory information security compliance/risk assessment questionnaire and workshops for ICT managers. UNDP also extends these activities to their regional and country offices.

124. However, not all the organizations have adopted ICT security policies and manuals or they are not applied consistently within the organization, resulting in different ICT security levels and policies within the same organization. This is the case, in particular, in organizations with a strong decentralized ICT structure, and those with regional and country offices. Given the strong inter-connectivity of modern ICT systems, different ICT security levels and policies applied in different parts of a same organization result in security threats for the entire organization. Furthermore, the roles, responsibilities and accountability of staff (IT and non-IT) as well as non-staff (e.g. external service providers) are not always clear. Finally, in various organizations where ICT security policies have been adopted, they are not adequately communicated to all staff and appropriate training is not provided to IT and non-IT staff.

125. Hence, in the Inspectors' view, **the executive heads of the United Nations system organizations should ensure that an ICT security strategy, in the form of a stand-alone document or as part of the corporate ICT strategy, is prepared and regularly updated.** In this regard, new IT security risks, for example, through various technologies and systems such as mobile devices, Blackberries, Internet, ERP systems, and so on, should be taken into account. The ICT security strategy or polices and manual should also clarify the roles, responsibilities and accountability of staff with respect to IT security. The policies should be communicated to staff and relevant training should be provided, as appropriate.

126. Regular ICT security reports should be prepared by the relevant officers in the ICT department and submitted to senior management as well as to the ICT governance committee, or equivalent, for consideration and action.

F. ICT business continuity and disaster recovery

127. Most organizations have adopted policies and plans on business continuity and disaster recovery and some organizations are in the process of doing so. A few organizations (UNDP, UNICEF and the United Nations) have already conducted tests and simulations of their systems.

128. The Inspectors noted that technological changes, such as the use of ERP systems and cloud computing, poses new and additional business continuity risks (including to connectivity and safe backup hosting sites), which need to be addressed and taken into account when preparing, implementing and testing business continuity and disaster recovery plans. In this context, some officers interviewed proposed looking into the role of UN-ICC as the service provider for many United Nations system organizations, and also into possibilities and ways of increasing cooperation among United Nations organizations in this area, for instance by exploring the possibilities of organizations serving as mutual safe backup sites for each other, as already practiced among some of the New York- and Geneva-based organizations.

129. In the Inspectors' view, **the executive heads of the United Nations organizations should include business continuity and disaster recovery risks in their ICT risk assessments and registers, and speed up the**

adoption and implementation of their respective plans, which should be updated and tested periodically. Regular reports should be made to the ICT governance committee on the adoption and implementation of the organizations' business continuity and disaster recovery plans, insofar as they pertain to ICT issues.

V. SYSTEM-WIDE ICT COOPERATION

130. The work of the CEB ICT Network (ICTN) was considered useful and helpful overall for enhancing ICT coordination, cooperation and coherence within the United Nations system organizations. Indeed, the organizations would, in particular, benefit from the work of some of the ICTN working groups, such as those on ICT security and ICT cost categories.

131. At the same time, some organizations argued that the Network's discussions do not always lead to concrete outcomes and decisions, and that not all the organizations are in a position to effectively implement its proposals, recommendations and decisions. It was also mentioned that the cost of attending the Network's semi-annual meetings were fairly high for some organizations in relation to the benefits obtained. Finally, some officers expressed concern at the number of formal and informal ICT networks, in addition to the ICTN, such as local ICT networks at the different duty stations, the UN-ICC working group, among others, proposing that their number be reduced in order to avoid duplication and reduce participation costs. Other organizations indicated that the field-level ICT coordination bodies were relevant, useful and supportive mechanisms, and that it was at the prerogative of the individual United Nations Country Management Teams concerned to decide and provide guidance on how best to utilize those structures effectively.

132. In order to leverage the ICTN, some officers interviewed proposed that the role and work of the ICTN could be enhanced, if the CEB provided clear guidance, including through asking for and requesting specific outputs in the ICT area identified as common problems for the majority of the United Nations system organizations. It was also noted that information sharing on common ICT issues at the ICTN level could be further improved.

133. The Inspectors share these considerations. The HLCM, representing business and management, should include on its agenda strategic and ICT issues, such as ICT costs, ICT procurement, implementation of ERP systems, inter-connectivity among IT systems, IT security, the use of new technologies, that are common to and that affect all the United Nations system organizations. The respective discussions and decisions in the HLCM could then serve as guidance and provide overall direction to the ICTN and its work. At the same, this would encourage discussion of strategic ICT issues from a business perspective at a system-wide level in the HLCM and facilitate communication and interaction among ICT and business at that level.

134. The implementation of the following recommendation would enhance ICT coordination and cooperation within the United Nations system.

Recommendation 11
The Secretary-General, in his capacity as Chairman of the CEB, should streamline the CEB ICT Network by identifying and focusing on common ICT issues, and providing clear guidance to the network in order to improve cooperation and coordination among the United Nations system organizations.

Annex I

ICT governance committees, or equivalent, in the United Nations system organizations

Annex I is published on the JIU website (www.unjiu.org) together with the report.

Annex II

ICT strategies in the United Nations system organizations

Annex II is published on the JIU website (www.unjiu.org) together with the report.

Annex III

Chief Information Officers (CIO), or equivalent, in the United Nations system organizations

Organization	Title	Grade	Reporting Line	Functions
United Nations	**Chief Information Technology Officer (CITO)**	ASG	The CITO is accountable to the Secretary-General, and reports to the Deputy Secretary-General who has been delegated the responsibility for oversight of the Secretariat-wide ICT portfolio of activities	The CITO is provided with sufficient central authority and resources to oversee ICT activities in the United Nations Secretariat worldwide (*). The CITO is responsible for the overall direction and performance of ICT activities in the organization. Key functions and responsibilities include: (a) providing strategic vision and leadership in the management of information and technology for the global Secretariat, (b) acting as the principal representative of the Secretary-General with regard to technology and information management; (c) providing advice to the executive committee on information and communications technology, in the capacity as permanent member of the committee; (d) promulgating ICT policies and standards; (e) participating in the ICT steering committees which guide major ICT initiatives; (f) acting as the Head of OICT (responsible for carrying out strategic ICT activities and providing shared services affecting the entire organization); (g) monitoring and improving the effectiveness of the ICT management framework.
UNCTAD *	**Chief, Information Technology Support Section**	P5	The ITSS Chief reports to the Head of Administration and Chief Resource Management Service	
UNODC *	**Chief, Information Technology Service**	D1	The ITS Chief reports to the Director of the Division of Management at UNOV/UNODC. Technically, the ITS Chief also reports to the CITO of the United Nations	
UNEP *	**ICT Advisor**	P5	The ICT Advisor reports to the Director of the Office of Operations in the Executive Office	
UN-Habitat *				

UNHCR	**CIO & Director Division of Information Systems and Telecommunications (DIST)**	D2	The CIO reports directly to the Executive Head (High Commissioner)	The CIO chairs the ICT Business Owners Committee (ICTBOC) that is attended by Deputy Directors to ensure ICT investments in UNHCR are well governed and system-wide systems are developed as far as possible. HQ and field investment is being aligned so that projects are visible and investment can be tracked. CIO provides support in running the ICTGB which is chaired by the Deputy High Commissioner and attended by Divisional and Bureau Directors. Major investment programs are brought here for approval or status update.
UNRWA *	**Chief Information Systems Division**	P5	The Chief reports to the Director of Administrative Support (D1)	
UNDP	**The UNDP Chief Technology Officer (CTO) and Director of the Office of Information Systems and Technology (OIST)**	D2		The CTO oversees ICT-related United Nations reform initiatives and represents UNDP in various inter-agency fora, oversees ICT governance, and implements the IM strategy. The CTO provides technical leadership in the procurement, development, management and enhancement of ICT systems and services, provides technical support for mission-critical enterprise ICT systems, implements fraud prevention controls, and enables the appropriate assessment and management of ICT risk.
UNFPA	**Chief, Management Information Services**	D1	The Chief reports directly to the Deputy Executive Director, Management.	The Chief strategizes, manages and supervises ICT-related initiatives, activities and operations globally, including ERP in UNFPA. The Chief is responsible for creating an enabling environment with the integration of ICT into development and operational business processes leading to effective and efficient programme delivery. The Chief ensures that the enabled environment stretches globally within UNFPA and serves all staff, offices and activities with the adoption of UNFPA-specific ICT standards. The Chief ensures business continuity of UNFPA operations through maintenance of fully functioning ICT systems and disaster recovery plans.
UNICEF	**Director Information Technology Solutions and Services (ITSS)**	D2	The ITSS Director reports to the Deputy Executive Director, Management (ASG)	The Director has an authority span equivalent to an organizational CIO and CTO. He/She initiates the majority of substantive undertakings.
WFP	**Chief Information Officer (CIO)**	D2	The CIO reports to the Deputy Executive Director and Chief Operating Officer (COO) for Operations.	The functions of the ICT Director and CIO are as follows: • Formulate overall strategies and policies for ICT and ensure properly implementation and compliance; • Advise management on all ICT issues and initiatives; • Oversee the development of a global ICT strategy to provide cost-effective access to information; • Manage the planning, administration and execution of all system maintenance and enhancement activities; • Develop strategies to contain the cost of ownership of technologies and monitor global ICT services expenditure; • Establish and consolidate relationships with partner United Nations agencies and other international bodies; and • Initiate and participate in private-sector partnership arrangements.

UNOPS				
ILO	**Director, Information Technology and Communications Bureau (ITCOM)**		The ITCOM Director reports to the Executive Director of Management and Administration Sector (MAS)	The current vacancy announcement for Director of ITCOM includes new functions and duties, including strategic functions concerning IT.
FAO	**Chief Information Officer (CIO)**		The CIO reports to the Deputy Director-General (Operations)	The CIO is the principal adviser to the organization's senior management and the Director of the Division providing IT services with regard to information technology and systems, including strategy, architecture, governance, policy and operations.
UNESCO	**Chief Information Officer (CIO)**		The CIO reports to the Assistant Director-General for Administration (ADG/ADM)	The CIO will be responsible for all substantive and operational needs relating to the organization's knowledge and information management systems (KIMS). This will involve developing, maintaining and monitoring the implementation of an effective KIMS strategy. The CIO will serve as the principal advisor to senior management with regard to knowledge and information management and ICT systems and systems integration, and will lead innovation, increase operational impact and optimize investment in UNESCO's information and communication technology platforms.
ICAO	**Chief of ICT Section**	P 5	The Chief of ICT reports to the Director or the Deputy Director of ADB.	No CIO role and function has been established at ICAO. The Chief of ICT is the highest graded IT professional in ICAO and is the decision-making authority on technical and operational IT issues.
WHO	**Director, ITT**			
UPU				
ITU	**Chief, Information Services Department**	D1	The Chief is accountable and reports to the SG or the DSG	
WMO	**Chief, Information Technology Division**	P5	The Chief is accountable and reports to the Director, Resource Management Department (D2)	
IMO	**Deputy Director/ Head IT & IS**	D1	The holder of this post reports to the Director, Administrative Division or the ASG (D2)	
WIPO				

UNIDO	**Chief, Information, Communications Management**	P5	The Chief reports to the Managing Director, Programme Support and General Management Division (D2)	
UNWTO	**ICT Programme Coordinator**	P4	The Coordinator reports to the Director of Administration and Finance	
IAEA	**Chief Information Officer (CIO), Director, MTIT**	D	The CIO reports to the Deputy Director-General, Management	The CIO is responsible for ICT operational and policy issues. The CIO reports to the Secretariat executive leadership on issues related to the Agency's information strategy, security, planning, capital investments, policies and standards.

* UNCTAD, UNEP, UN-Habitat, UNOV/UNODC and UNWRA are governed by the ICT governance framework of the United Nations established by the Office of Information and Communications Technology (OICT) of the United Nations Secretariat and follow the ICT strategy of the United Nations.

Annex IV

Overview of action to be taken by participating organizations on JIU recommendations JIU/REP/2011/9

		Intended impact	CEB*	United Nations, its funds and programmes												Specialized agencies and IAEA												
				United Nations**	UNCTAD	UNODC	UNEP	UN-HABITAT	UNHCR	UNRWA	UNDP	UNFPA	UNICEF	WFP	UNOPS	ILO	FAO	UNESCO	ICAO	WHO	UPU	ITU	WMO	IMO	WIPO	UNIDO	UNWTO	IAEA
Report	For action		☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	For information		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Recommendation 1		**e**		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Recommendation 2		**e**		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Recommendation 3		**e**		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Recommendation 4		**e**		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Recommendation 5		**a**		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Recommendation 6		**a**		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Recommendation 7		**e**		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Recommendation 8		**d**		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E

Legend: **L:** Recommendation for decision by legislative organ
E: Recommendation for action by executive head
☐ : Recommendation does not require action by this organization

Intended impact: **a:** enhanced accountability **b:** dissemination of best practices **c:** enhanced coordination and cooperation **d:** enhanced controls and compliance
e: enhanced effectiveness **f:** significant financial savings **g:** enhanced efficiency **o:** other

* Action to be taken by the Chairman of the CEB.
** Covers all entities listed in ST/SGB/2002/11, other than UNCTAD, UNODC, UNEP, UN-HABITAT, UNHCR, UNRWA.

		Intended impact	CEB*	United Nations, its funds and programmes													Specialized agencies and IAEA													
				United Nations**	UNCTAD	UNODC	UNEP	UN-HABITAT	UNHCR	UNRWA	UNDP	UNFPA	UNICEF	WFP	UNOPS	ILO	FAO	UNESCO	ICAO	WHO	UPU	ITU	WMO	IMO	WIPO	UNIDO	UNWTO	IAEA
Report	For action		☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	For information		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Recommendation 9	**a**		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Recommendation 10	**d**		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Recommendation 11	**c**	E																											

Legend: **L:** Recommendation for decision by legislative organ
E: Recommendation for action by executive head
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Intended impact: **a:** enhanced accountability **b:** dissemination of best practices **c:** enhanced coordination and cooperation **d:** enhanced controls and compliance
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